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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/584,847

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EXAMINER

INYARD, APRIL C

ART UNIT

PAPER NUMBER

1794

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/584,847	Applicant(s) NOORDAM ET AL.	
	Examiner APRIL C. INYARD	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 11-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/28/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Claims 1-10 in the reply filed on 05/18/2009 is acknowledged.

Claims 1-18 are pending, Claims 11-18 have been withdrawn from consideration and Claims 1-10 have been considered as follows:

Claim Objections

2. Claim 10 is objected to because of the following informalities: Applicant recites the limitations "5'-Fdase", where Applicant defines this in their specification as a 5'-phosphodiesterase, but it recommended to amend the claim language such that it is clear that this is what Applicant means. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 5-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP §

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2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claims 5-6 recite the broad recitation for a range of RNA, and the claim also recites "preferably at least", and "most preferably at least", which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claim1-3 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanekawa (US Patent No. 4,303680):

Regarding **Claims 1 and 7**, Tanekawa discloses a method for producing a composition rich in 5'ribonucleotides comprising the steps of (1) autolysing suspended yeast cells at a controlled pH, where some intracellular RNA is hydrolysed, but 50-80% of the RNA remains not decomposed in the autolysed yeast cells, (2) heating the suspension, (3) centrifuging to separate the autolysate into a supernatant and insoluble residue, and (4) hydrolyzing the RNA from step (3) by treating with a 5'phosphodiesterase, where Tanekawa teaches that step (3) may occur either before or after step (4) (*Cols 3-4; Claim 1*).

The Examiner notes that the conversion of RNA to 5'-RNA occurs by hydrolyzing RNA with 5'-phosphodiesterase.

Tanekawa does disclose the final step of separating the 5'RNA containing fraction from the insoluble residues.

Tanekawa does not teach Applicant's step (b), wherein the cell wall fraction of the autolysate is specifically separated from the solution (supernatant) for hydrolytic treatment.

However, as Tanekawa teaches that the autolysate suspension can be hydrolyzed, Tanekawa teaches conversion of RNA contained in the cell walls.

It would have therefore been obvious at the time the invention was made to one having ordinary skill in the art to modify the process of Tanekawa to include a first centrifugation step to obtain a cell wall fraction because as disclosed by Tanekawa, the intracellular RNA is only partially degraded and a majority of the RNA remains bound to the autolysed cells, and thus it would be obvious to the skilled artisan to add a first centrifugation step to obtain the fraction rich

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in RNA (the cell membranes) before the treatment steps (3) and (4) because this will result in a final product that is more purely composed of 5'-RNA.

Regarding **Claim 2**, Tanekawa teaches that in step (4), the 5'-RNA is separated from the insoluble residues.

Regarding **Claim 3**, Tanekawa teaches that the autolysis of yeast cells is initiated by exposing the suspended yeast cells to an organic material in addition to agitation (*Examples and Claim 1*). The Examiner notes that the very process of autolysis involves damaging or disrupting the cell walls.

Regarding **Claims 5-6**, as discussed above, Tanekawa teaches that 50-80% of the RNA remains nondegraded in the autolysed yeast cells, which meets Applicant's recitation of at least 50% in Claim 5.

Tanekawa further teaches that only some of the intracellular RNA is hydrolysed (does not remain associated with the cell wall fraction). The Examiner therefore takes the position that at least 20% of the RNA remains associated with the cell wall fraction in the process disclosed by Tanekawa.

Regarding **Claim 10**, Tanekawa teaches that the RNA is converted to 5'-RNA using 5'-phosphodiesterase, and is additionally treated with an AMP deaminase to convert AMP into 5'-IMP (*Col 4, lines 24-25*).

9. **Claims 4 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanekawa as evidenced by Halasz (Use of Yeast Biomass in Food Production, 1991, CRC Press, Inc: pp. 115-122 and p. 248):**

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As discussed above, Tanekawa teaches a method that meets Applicant's limitations of Claim 1.

Regarding **Claim 4**, Tanekawa does not teach use of enzymes to disrupt the cell membranes.

However, as evidenced by Halasz, autolysis is a relatively slow process, use of additional means to disrupt yeast cells walls, which include mechanical and enzymatic treatments, are known in the art of extracting RNA from yeast (*Chapter 5, I, A, pp. 115-122*).

It would have therefore been obvious at the time the invention was made to one having ordinary skill in the art to modify the process of Tanekawa by initiating cell rupture by using enzymatic treatments because this is known in the art of processing yeasts to extract RNA as a step by which the relatively slow autolytic process may be accelerated.

Regarding **Claims 8-9**, Tanekawa clearly teaches treatment of a suspension of autolysate that contains a mixture of RNA-containing cell wall fraction and recovered RNA derived from the yeast soluble fraction to convert the RNA to 5'-RNA using 5'phosphodiesterase.

Tanekawa does not specifically teach ultrafiltration of the yeast autolysate suspension.

However, as evidenced by Halasz, it is known in the art of producing yeast extracts to use ultrafiltration to treat autolysates in order to eliminate or reduce proteins and components that contribute to the bitterness of the yeast extract (*p. 248*).

It would therefore have been obvious at the time the invention was made to one having ordinary skill in the art to modify the process of Tanekawa by including a step involving ultrafiltration of the autolysate prior to hydrolytic treatment with 5'-phosphodiesterase to convert

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the RNA into 5'-ribonucleotides because this will result in a yeast extract composition that has a more appealing flavor profile with reduced bitterness.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to APRIL C. INYARD whose telephone number is (571) 270-1245. The examiner can normally be reached on Monday - Thursday 8:00 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Sample can be reached on (571) 272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David R. Sample/
Supervisory Patent Examiner, Art Unit 1794

APRIL C INYARD /A. C. I./
Examiner, Art Unit 1794